ELS and UV Detection of Succinic Acid

Technical Overview

Introduction
The Agilent Evaporative Light Scattering Detector delivers clean baselines, no drift, no solvent peaks and much greater response than a UV detector when analyzing succinic acid.

Succinic acid is an organic acid widely used in industry as an additive in products such as paints, clothing and many food products. It can be made from fermentation of glucose and used as a 4-carbon block for polymers.
This dicarboxylic acid does not have a good UV chromophore and therefore the method of detection, if the solute is not to be denatured, is RI. However, the separation of succinic acid from other substances that require gradient elution, such as proteins, rule out the use of RI detection. This meant that UV detection at low wavelengths was the preferred method of detection (Figure 2).

**Figure 1. Structure of succinic acid.**

**Conditions**

Sample: 1 mg/mL  
Column: PLRP-S 300Å 8 µm, 4.6 x 150 mm (p/n PL1512-3801)  
Eluent A: 1% ACN, 0.1% TFA, 99% Water  
Eluent B: 100% ACN, 0.1% TFA  
Gradient: 5-80% B in 20 min  
Flow Rate: 1.0 mL/min  
Detection: UV, 215 nm; Agilent ELSD

**Figure 2. 20 µg succinic acid using UV detection.**

The use of the Agilent ELSD overcomes these difficulties. With the Agilent ELSD, the baseline is stable, without any drift, and no solvent peak is detected (Figure 3).
The Agilent ELS detector gives a much greater response than the UV type, as succinic acid has a very poor UV chromophore. It is possible to detect succinic acid down to an on-column load of 2 µg, with a 1 mg/mL sample (Figure 4).